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EXAMINER	
LIN, PHYOWAI	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,319	LI ET AL.	
	Examiner	Art Unit	
	PHYOWAI LIN	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-18 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-18 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 December 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 12/23/2004 and 02/20/2007.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The references listed in the Information Disclosure Statement filed on December 23, 2004; February 20,2007 and October 30,2007 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-3, 5, 10-12 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by Kubo et al. (EP 1054524).

Regarding to claims 1 and 10, Kubo et al. disclose a WDM layer-based OchP (Optical Channel Protection) device capable of signal transmission on working channels and routing selection for protection channels between the transferred traffic and the WDM system (see FIG.4) comprising:

a transmitting module (transmitting module having operating channels 1a-4a, switching unit 28a,operating optical terminal unit 21a-24a and standby optical terminal unit 25a and 46a-see FIG.4) and

a receiving module (receiving module having operating optical terminal unit 21b-24b, standby optical terminal unit 25b and 46b ,switching unit 28b and operating channels 1b-4b-see FIG.4);

the transmitting module and the receiving module each comprising N working channels (operating optical terminal 21a-24a of transmitting module and optical terminal unit 21b-24b of receiving module) connected to receiving ends and to transmitting ends of N working channels of the WDM system respectively (see FIG.4 where in operating optical terminal 21a-24a of transmitting module and optical terminal unit 21b-24b of receiving module are connected to transmitting end and receiving end of Mux/Demux 26a and 26b);

M protection channels (standby optical terminal unit 25a and 46a of transmitting module and standby optical terminal unit 25b and 46b of receiving module) connected to receiving ends and to transmitting ends of M protection channels of the WDM system respectively (see FIG.4 where in standby optical terminal unit 25a and 46a of transmitting module and standby optical terminal unit 25b and 46b of receiving module are connected to transmitting end and receiving end of Mux/Demux 26a and 26b).

a switching device (switching unit 28a of transmitting part and switching unit 28b of receiving part) designed to switch signals in the working channels to the protection

channels and to switch signals in the protection channels to the working channels according to switching requests from the WDM system; wherein M and N are natural numbers and M<N (see paragraphs [0039] [0040] [0043] [0045]; FIG.3 and FIG.4 where in switching unit 28a of transmitting part designed to switch signals in the working channels (operating channel 1a through 4a) to the protection channels when fault occurs on working channels and switching unit 28b of receiving part designed to switch signals in the protection channels to the working channels at the receiving end part and N operating system has N=4 which is greater channels assigned than M standby system has M=2).

Regarding to claims 2 and 11, Kubo et al. disclose everything claimed as applied above (see claims 1 and 10). In addition, Kubo et al. disclose the WDM layer-based OChP device further includes: wherein M is greater than 1 (see paragraph [0045] and FIG.4 where in standby channel is assigned by M=2).

Regarding to claims 3 and 12, Kubo et al. disclose everything claimed as applied above (see claims 1 and 10). In addition, Kubo et al. disclose the WDM layer-based OChP device further includes: wherein the switching device of the transmitting module comprises N 50:50 couplers (optical couplers 31a through 34a-see paragraph [0040]; FIG.2 and FIG.4) and an NxM optical switch (combination of optical switches 35a and 36a-see paragraph [0040]; FIG.2 and FIG.4); one of the two output ports of each coupler being connected to a working channel in the WDM system (see paragraph [0040]; FIG.2 and FIG.4 where in one of the two output ports of each optical coupler 31 being connected to a operating optical signal 41a (operating optical terminal unit 21a) of

WDM system), the other of the two output ports being connected to an input port of the NxM optical switch (see paragraph [0040]; FIG.2 and FIG.4 where in other of the two output ports of each optical coupler 31 being connected to an input port of the optical switches 35a and 36a) ; M output ports of the NxM optical switch being connected to the M protection channels of the WDM system respectively (see paragraph [0040]; FIG.2 and FIG.4 where in outputs from optical switches 35a and 36a being connected to the standby optical terminal units 25a and 46a of the WDM system) ; and

wherein the switching device of the receiving module comprises N 50:50 couplers (optical coupler 31a-see paragraph [0040]; FIG.2 and FIG.4) and an MxN optical switch (combination of optical switches 35a and 36a-see paragraph [0040]; FIG.2 and FIG.4), one of the two input ports of each coupler being connected to a working channel in the WDM system (see paragraph [0040]; FIG.2 and FIG.4 where in one of the two output ports of each optical coupler 31 being connected to a operating optical signal 41a (operating optical terminal unit 21b) of WDM system), and the other of the two input ports being connected to an output port of the MxN optical switch (see paragraph [0040]; FIG.2 and FIG.4 where in other of the two output ports of each optical coupler 31 being connected to an output port of the optical switches 35a and 36a) ; M input ports of the MxN optical switch being connected to the M protection channels of the WDM system respectively (see paragraph [0040]; FIG.2 and FIG.4 where in inputs from optical switches 35a and 36a being connected to the standby optical terminal units 25b and 46b of the WDM system).

Regarding to claims 5 and 14,Kubo et al. disclose everything claimed as applied above (see claim 1 and 10). In addition, Kubo et al. disclose The WDM layer-based OChP further includes: wherein said switching device of said transmitting module comprises an Nx (N+M) optical switch (optical switch 28a), the N+M output ports of the Nx(N+M) optical switch being connected to the N working channels (operating optical terminal units 21a through 24a) and the M protection channels (standby optical terminal units 25a and 46a) of the WDM system respectively (see FIG.4 where in switching unit 28a has switching function as four operating channels inputs (N) and output four operating optical terminal units and two standby optical terminal units (N+M) so that (N+M) output ports of the Nx (N+M) optical switches being connected to operating optical terminal units 21a through 24a of the WDM system and standby optical terminal units 25a and 46a of the WDM system respectively); and

wherein the switching device of the receiving module comprises an (N+M) x N optical switch (optical switch 28b), the N+M input ports of the (N+M) x N optical switch being connected to the N working channels (operating optical terminal units 21b through 24b) and the M protection channels (standby optical terminal units 25b and 46b) of the WDM system respectively (see FIG.4 where in switching unit 28b has switching function as input four operating optical terminal units and two standby optical terminal units (N+M) and outputs four operating channels (N) so that (N+M) input ports of the Nx (N+M) optical switches being connected to operating optical terminal units 21b through

24b of the WDM system and standby optical terminal units 25b and 46b of the WDM system respectively).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 4 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al. (EP 1054524) in view of Frascolla et al. (US Pub Number 2003/0161629).

Regarding to claims 4 and 13, Kubo et al. disclose everything claimed as applied above (see claims 1 and 10). In addition, Kubo et al. disclose the WDM layer-based OChP device further includes: wherein the switching device of the transmitting module comprises N 50:50 couplers (optical couplers 31a through 34a-see paragraph [0040]; FIG.2 and FIG.4) and an NxM optical switch (combination of optical switches 35a and 36a-see paragraph [0040]; FIG.2 and FIG.4); one of the two output ports of each coupler being connected to a working channel in the WDM system (see paragraph [0040]; FIG.2 and FIG.4 where in one of the two output ports of each optical coupler 31 being connected to a operating optical signal 41a (operating optical terminal unit 21a) of WDM system), the other of the two output ports being connected to an input port of the NxM optical switch (see paragraph [0040]; FIG.2 and FIG.4 where in other of the two output ports of each optical coupler 31 being connected to an input port of the optical

switches 35a and 36a) ; M output ports of the NxM optical switch being connected to the M protection channels of the WDM system respectively (see paragraph [0040]; FIG.2 and FIG.4 where in outputs from optical switches 35a and 36a being connected to the standby optical terminal units 25a and 46a of the WDM system) ; and

wherein the switching device of the receiving module comprises N 50:50 couplers (optical coupler 31a-see paragraph [0040]; FIG.2 and FIG.4) and an MxN optical switch (combination of optical switches 35a and 36a-see paragraph [0040]; FIG.2 and FIG.4), one of the two input ports of each coupler being connected to a working channel in the WDM system (see paragraph [0040]; FIG.2 and FIG.4 where in one of the two output ports of each optical coupler 31 being connected to a operating optical signal 41a (operating optical terminal unit 21b) of WDM system), and the other of the two input ports being connected to an output port of the MxN optical switch (see paragraph [0040]; FIG.2 and FIG.4 where in other of the two output ports of each optical coupler 31 being connected to an output port of the optical switches 35a and 36a) ; M input ports of the MxN optical switch being connected to the M protection channels of the WDM system respectively (see paragraph [0040]; FIG.2 and FIG.4 where in inputs from optical switches 35a and 36a being connected to the standby optical terminal units 25b and 46b of the WDM system).

Even though Kubo et al. disclose N 50:50 coupler couples to NxM optical switch, Kubo et al. fail to specifically disclose N 1x2 switches couples to NxM optical switch.

Frascolla et al. disclose the WDM layer-based OChP device further includes: N 1x2 optical switches couples to Nx1 optical switch (see FIG.8 where in plurality of 1x2 optical switches).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Kubo et al. with the teaching of Frascolla et al. so as to use optical switches 1x2 and increase the protection channels with switching technique from working channels to protection channels and vice versa in the WDM transporting system because it would allow the WDM transporting system improving the reliability as the number of protection channels increase and back up for the failure working channels.

7. **Claims 6-9 and 15-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Frascolla et al. (US Pub Number 2003/0161629) in view of Kubo et al. (EP 1054524).

Regarding to claim 6, Frascolla et al. disclose a WDM layer-based OChP method capable of signal transmission through working channels and routing selection for protection channels between the transferred traffic and the WDM system comprising the following steps: monitoring by the WDM system of quality of signals in each channel and routing state of OchP modules in the system in real time (see paragraph [0197]; paragraph [0198] lines 1-4 and FIG.17 where in DECT and PD in both transmitting and receiving side are monitoring the quality of signal in real time);

determining by the WDM system whether some signals in the working channels are to be switched to the protection channels; and if they are, selecting the protection

channels the WDM system (see paragraph [0197]; paragraph [0198] lines 1-4; paragraph [0198] lines 1-10 and FIG.17 where in some signals from the working channel are switched to the protection channel of the WDM system);

sending by the WDM system of accurate switching requests to the OchP transmitting module and the OchP receiving module (see paragraph [0195]; paragraph [0209]; and FIG.17 where in CPU processors of transmitting and receiving side send switching requests to the transmitting and receiving side);

performing by the OchP transmitting module and the OchP receiving module of switching according to the switching requests from the WDM system (see paragraph [0200] and FIG.17 where in based on switching requests to transmitting and receiving side, each side performs switching signal from working to protection and vice versa);

Even though Frascolla et al. disclose monitoring the signal quality of WDM system and based on quality signal sending switching request to transmitting and receiving side for working to protection and vice versa, Frascolla et al. fail to specifically disclose M protection channels, M and N being natural numbers, M being less than N.

Kubo et al. disclose wherein the WDM system comprises N working channels and M protection channels, M and N being natural numbers, M being less than N (see paragraph [0045] and FIG.4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Frascolla et al. with the teaching of Kubo et al. so as to increase the protection channels with switching technique from working channels to protection channels and vice versa in the WDM transporting system

because it would allow the WDM transporting system improving the reliability as the number of protection channels increase and back up for the failure working channels.

Regarding to claim 7, Frascolla et al. and Kubo et al. disclose everything claimed as applied above (see claim 6). In addition, Kubo et al. disclose the WDM layer-based OChP device further includes: wherein M is greater than 1 (see paragraph [0045] and FIG.4 where in standby channel is assigned by M=2).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Frascolla et al. with the teaching of Kubo et al. so as to increase the protection channels with switching technique from working channels to protection channels and vice versa in the WDM transporting system because it would allow the WDM transporting system improving the reliability as the number of protection channels increase and back up for the failure working channels.

Regarding to claim 8, Frascolla et al. and Kubo et al. disclose everything claimed as applied above (see claim 6). In addition Frascolla et al. disclose the WDM layer-based OChP device further includes: determining by the WDM system whether come signals transmitted in the protection channels are to be switched back to the working channels, and if they are, determining the working channel to receive the signals (see paragraph [0020] lines 10-15 and FIG.17 where in the protecting channel is switched back to the working channel) , and sending accurate switching requests to the OchP transmitting module and the OchP receiving module simultaneously (see paragraph [0195]; paragraph [0209] and FIG.17 where in CPU processors of

transmitting and receiving sides have ability to send switching requests to transmitting and receiving sides at the same time).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Frascolla et al. with the teaching of Kubo et al. so as to increase the protection channels with switching technique from working channels to protection channels and vice versa in the WDM transporting system because it would allow the WDM transporting system improving the reliability as the number of protection channels increase and back up for the failure working channels.

Regarding to claim 15, Frascolla et al. disclose a WDM layer-based optical channel protection method for a multi-channel WDM system comprising monitoring quality of signals carried by the channels (see paragraph [0197]; paragraph [0198] lines 1-4 and FIG.17 where in DECT and PD in both transmitting and receiving side are monitoring the quality of signal);

determining based on the quality of a signal in a working channel whether to route the signal via a protection channel (see paragraph [0197]; paragraph [0198] lines 1-4; paragraph [0198] lines 1-10 and FIG.17 where in some signals from the working channel are switched to the protection channel of the WDM system);

sending a first switching request to a transmitter switching unit to route the signal via a protection channel (see paragraph [0195]; paragraph [0200] lines 1-10; and FIG.17 where in CPU processor sends switching request to transmitting side to route the signal via a protection channel);

sending a second switching request to a receiver switching unit to route the signal via a protection channel (see paragraph [0209]; paragraph [0200] lines 10-15; and FIG.17 where in CPU processor sends switching request to receiving side to route the signal via a protection channel);

Kubo et al. disclose wherein the WDM system comprises N working channels and M protection channels, M and N being natural numbers, M being less than N (see paragraph [0045] and FIG.4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Frascolla et al. with the teaching of Kubo et al. so as to increase the protection channels with switching technique from working channels to protection channels and vice versa in the WDM transporting system because it would allow the WDM transporting system improving the reliability as the number of protection channels increase and back up for the failure working channels.

Regarding to claim 16, Frascolla et al. and Kubo et al. disclose everything claimed as applied above (see claim 15). In addition, Kubo et al. disclose the WDM layer-based OChP device further includes: wherein M is greater than 1 (see paragraph [0045] and FIG.4 where in standby channel is assigned by M=2).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Frascolla et al. with the teaching of Kubo et al. so as to increase the protection channels with switching technique from working channels to protection channels and vice versa in the WDM transporting system

because it would allow the WDM transporting system improving the reliability as the number of protection channels increase and back up for the failure working channels.

Regarding to claim 17, Frascolla et al. and Kubo et al. disclose everything claimed as applied above (see claim 15). In addition, Frascolla et al. disclose determining whether to route a signal on a protection channel via the signal's working channel (see paragraph [0200] lines 1-10 where in the detector PD and DECT determine working channel failure so that the signal from the working channel is to be routed on a protection channel);

sending a first switching request to a transmitter switching unit to route the signal via the signal's working channel (see paragraph [0195]; paragraph [0200] lines 1-10 where in CPU sends switching request to a transmitting side to route signal on protection channel via the signal from the working channel);and

sending a second switching request to a receiver switching unit to route the signal via the signal's working channel (see paragraph [0209]; paragraph [0200] lines 10-15 where in CPU sends switching request to a receiving side to route signal on protection channel via the signal from the working channel).

Regarding to claims 9 and 18, Frascolla et al. and Kubo et al. disclose everything claimed as applied above (see claims 6 and 15). In addition, Kubo et al. disclose routing low-priority traffic via the protection channels when the protection channels do not carry signals (see paragraph [0041] lines 28-29 and FIG.4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Frascolla et al. with the teaching of Kubo et al.

so as to increase the protection channels with switching technique from working channels to protection channels and vice versa in the WDM transporting system because it would allow the WDM transporting system improving the reliability as the number of protection channels increase and back up for the failure working channels.

Citation of Pertinent Prior Art

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(a) Hayashi et al. (US Patent Num 6516110)

(b) Kakizaki et al. (US Patent Num 6975811)

(c) Sugawara et al. (US Patent Num 6983108)

(d) Bala et al. (US Patent Num 6292281)

(e) Fishman (US Patent Num 6046832)

(f) Fishman (US Patent Num 5982517)

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHYOWAI LIN whose telephone number is (571) 270-1659. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PWL

02/15/08

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SHI K. LI
PRIMARY PATENT EXAMINER